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ABSTRACT

Recent research indicates a trend toward increases in the share of all institution-based student aid funds going to merit aid and in merit scholarship competition among institutions. This paper presents findings of a study that surveyed 379 nonprofit bachelors'-degree-granting institutions in 1983-84 and 1991-92. Findings indicate that the less selective institutions in both the public and private sectors are far more involved in merit aid than their more prestigious counterparts. However, the revenue foregone by institutions that did engage heavily in merit competition clearly absorbed resources that could otherwise go into the educational enterprise. The costs of merit competition are clearly on the rise. A second finding is that students are rewarded for the difference between their personal SAT scores and the school's average SAT scores. In summary, merit aid compensates students for attending schools that are "beneath" them, especially in the private sector. Although white students (excluding athletes) get a proportionate share of total merit aid, they are overrepresented in the merit pool in private institutions and underrepresented at public schools. Black and Hispanic students, however, collect a disproportionate share of merit aid at public schools while losing out in the private sector. Finally, the evidence that merit aid rewards higher academic qualifications while, especially in the private sector, providing smaller awards to students from more affluent backgrounds is encouraging from both an equity and an efficiency perspective. Five tables are included. Contains seven references. (LMI)

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CONSORTIUM FOR POLICY RESEARCH IN EDUCATION

Merit Aid: Students, Institutions, and Society

Michael S. McPherson
Morton Owen Schapiro

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Merit Aid: Students, Institutions, and Society

Michael S. McPherson
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August 1994

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Abstract

Evidence suggests that the share of all institution-based student aid funds going to merit aid has been rising sharply over the last decade. This paper draws on recent data sets that have not previously been used in this context to pursue answers to several questions:

- What kind of institutions invest in merit aid?
- What kind of students are likely to receive merit aid?
- How has the level and distribution of merit aid been changing over time?
- What are the consequences of merit aid practice for the quality and distribution of educational opportunity in the United States?

The institutional data show that the less selective institutions in both the private and public sectors are far more involved in merit aid than their more prestigious counterparts. The fact that the most selective institutions are not spending very much to induce top students to attend one high quality school over another implies there is little wasteful spending in that area. At the same time, the revenue foregone by institutions that engage heavily in merit competition absorbs resources that could otherwise go into the educational enterprise.

Further, a student with a given SAT score gains substantially in expected merit award by attending an institution (particularly a private one) with lower average SAT scores. That is, students are generously rewarded for the *difference* between their SAT scores and the school's average. Since one school's merit student may be another's average student, this implies that the mixing effect of merit awards is quite widespread.

Biographies

Michael S. McPherson is Dean of the faculty of Williams College, where he chairs the Economics Department, and co-directs the Williams Project on the Economics of Higher Education. He also is a founding editor of *Economics and Philosophy*, a journal published by Cambridge University Press.

Morton Owen Schapiro is Dean of the College of Letters, Arts, and Sciences of the University of Southern California where he chairs the Economics Department.

McPherson and Schapiro have co-authored two recent books in American higher education: *Keeping College Affordable: Government and Educations Opportunity* (Brookings, 1991) and (with Gordon C. Winston), *Paying the Piper: Productivity Incentives and Financing in U. S. Higher Education* (University of Michigan Press, 1993).

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Introduction

Scattered evidence suggests that the share of all institution-based student aid funds going to merit aid has been rising sharply over the last decade. Anecdotal evidence suggests that merit competition is particularly intense among relatively prestigious universities of the "second tier" and among liberal arts colleges in the Midwest that are facing enrollment declines and increasingly severe public sector price competition. Some observers expect the end of "overlap" agreements to cause merit scholarship competition to spread more widely among elite institutions as well. These trends seem very important to understand.

This paper draws on recent data sets that have not previously been employed in this context to pursue answers to several critical questions: What kinds of institutions invest in merit aid? What kinds of students are likely to receive merit aid? How has the level and distribution of merit aid been changing over time? Behind these essentially descriptive questions lies an important policy question: What are the consequences of merit aid practices for the quality and distribution of educational opportunity in the United States?

Merit Aid and Society

The social consequences of merit aid are a quite complex matter (McPherson and Schapiro 1990). We find it helpful in sorting out the dimensions of the problem to contrast two aspects of the competitive forces that push schools toward merit aid. One of these is the attempt by schools of lesser reputation or quality to "buy" students from more prestigious schools through offers of merit aid. This kind of competitive effort redistributes students among institutions, with the effect of increasing the representation of lower-ranking students at less prestigious institutions and, more ambiguously, of reducing the representation of high-ranking students at more prestigious institutions.[1]

The other aspect of competition is that among schools of roughly equal quality or reputation for the most meritorious students in the schools' combined applicant pool. The individual school's aim here is to improve its relative position among a more-or-less well defined group of peer institutions. Merit aid competition will move students within this group of schools, but will not affect the overall distribution of high-ranking students by institutional quality. The main effect of merit aid here is to lower the net price paid by meritorious students for an education of given quality. Merit aid results in a redistribution of dollars between schools and students, rather than a systematic redistribution of students among schools.

Plainly, these two aspects of merit aid competition are entangled together in reality. Analytically, however, they are worth distinguishing because they raise quite different social issues. If we focus on the second aspect of competition—that between peer institutions of similar quality—from the schools' point of view, merit aid wars can be seen as an instance of the "Prisoners' Dilemma." Each individual school tries to gain an advantage relative to its rivals by bidding down the price charged to high-quality students. But the net effect of this competitive effort is simply that all schools in the group match one another's offers, and wind up with essentially the same group of students they would have had anyway, but with less net tuition revenue. If the schools could arrive at an enforceable agreement to abstain from merit aid, the allocation of students among schools would be unaffected and the schools would have higher net revenues, and hence be better off. This is the economic logic behind efforts by groups of schools like the Ivy League to arrive at agreements not to compete for students through merit aid awards.

Such agreements are plainly desirable for the schools involved, but are they socially desirable? The main social effect of merit competition among a group of peer institutions of similar quality is a redistribution of resources between the schools and (the families of) students. On the one hand, we need to ask whether increasing the incomes of families of high-ranking students is a desirable thing. On the other hand, we need to consider what

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[1] "More ambiguously" because a merit student at a low ranking institution might be a below average student at a higher ranking institution.

activities the colleges will cut back on as a result of smaller net tuition revenues if they compete on merit aid. Both of these are difficult judgments, but there is a good case to be made that the distribution of resources that results from prohibiting merit aid is the more desirable one. Considering the impact on family incomes, merit award winners will tend to come from affluent families and to have bright future prospects owing to their high achievements. There is no obvious purpose of equity served by adding to their (and their families') advantage through a reduced price for college. However, the presence of merit awards might provide an added stimulus to students to perform well in high school, with attendant social benefits. The prospect of merit dollars may induce students to improve their performance both in strictly academic pursuits and in those kinds of extracurricular activities that college admissions committees seem to care about. Under current arrangements, competition to get into highly selective colleges provides a strong incentive to top-ranking high school students, but is of little consequence for others. Merit aid at the same class of institutions would probably not change these incentives notably, but to the extent that merit aid extended into the ranks of less selective institutions, it could have a favorable effect on high school students' incentives. We know of no evidence that would help in assessing the size of such effects.

Concerning the impact of colleges' merit competition on colleges' expenditure on other activities, the most obvious place to cut back in order to finance merit scholarships would be need-based financial aid. From both equity and efficiency standpoints, this would seem to be clearly an undesirable trade-off. Schools might, of course, cut back on other types of expenditure to finance merit aid, and some of these might have been wasteful. However, social policies that provide both tax preferences and direct subsidies to higher education indicate that spending by schools is judged on the margin to have net social benefits, so it seems plausible that cutbacks in the activities of colleges, in favor of socially unproductive spending on merit aid, are undesirable.

These are important arguments, and they seem to us to provide good reasons on the whole for discouraging merit competition among institutions of comparable quality. In particular, these arguments may apply with special force to the most prestigious group of institutions, which includes the institutions that were pursued by the Justice Department partly on the ground that agreements not to offer merit scholarships were illegal. Because students already work hard in high school to gain admission to these highly selective institutions, it is unlikely that merit awards would induce any further effort toward good performance in high school. Moreover, the possible beneficial effects of relocating students from more to less selective institutions through merit offers, discussed just below, would not pertain to merit offers from top-ranking institutions. Our judgment is that agreements among top-ranking institutions to eliminate or restrict merit awards are in fact socially desirable.

So far, our analysis has focused only on that aspect of competition which concerns schools with student bodies with similar qualifications. We must now consider the social consequences of the other aspect of merit competition—the use of merit dollars by schools of lesser reputation to "buy" students from more prestigious schools. A key question raised by this issue is the following: what is the socially most desirable way to distribute high-quality students among colleges and universities? Is it best to cluster the most capable students together, or to distribute them more widely among institutions where they will have peers of varying quality?

The existing system of selective admissions (followed by the top schools in the country) is a sorting mechanism in which students with the highest abilities are grouped together, leaving lower ability students in their own group (Cook and Frank 1993).[2] What would happen if merit aid had the effect of leading to a more even distribution of students by ability across a range of institutions?

There is surprisingly little known about the effects of alternative groupings of students at the higher education level. However, there has been a good deal of work done on "tracking" of students by ability group at the secondary school level. Presumably the gain that is sought in tracking is the greater efficiency of grouping together students who can handle similar material and progress at a similar pace. Yet there may be offsetting disadvantages if less capable students learn more in classrooms that include some more capable students. Vanfossen, Jones, and Spade (1987) summarize that literature and find that the particular track a student is placed in plays an important role in determining a variety of educational outcomes including academic performance, educational aspirations, and the like.

Why is it that students on a "lower" track end up suffering academically? The authors speculate that teachers may treat these students differently and, in addition, following Coleman and others (1966), that a critical mass of interested and enthusiastic students is needed in order to push along the learning process. We should add that another explanation relates to the possibility that some of the best teachers are attracted by the opportunity to teach the best students and, hence, teacher quality may vary positively with student quality.

If these findings carry over to college, the educational experience of an average student at an institution that attracts less than stellar students should be less good than the experience the same student would have at an institution where there are a larger number of better students. An alternative allocation scheme would be to group students in a more random fashion—in other words, to increase the amount of mixing of students of different abilities. Taking "better" students away from institutions in which they predominate and putting them in "lower quality" institutions may improve the educational experiences for all students at these less prestigious institutions if this motivates both teachers and other

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[2]Cook and Frank argue that the clustering of top students has increased in recent years.

students to be more engaged in the learning process.[3] Indeed, the pursuit of such an outcome is surely part of the motivation for schools that use merit scholarships to try to recruit some highly capable students to their institution.

But such a scheme would not, using the terminology of an economist, be Pareto optimal, that is, there would be some losses to accompany the gains. In other words, the interests of some students would be served along with, quite possibly, the efficiency effects of the higher education system, but some students would be hurt.

An interesting paper by Henderson, Meiszkowski, and Sauvageau (1978) describes these differential effects in detail. Looking at primary school data from Canada, they find that there is a strong peer group effect—that the achievement of individual students depends to a large extent on the quality of his or her classmates. The efficiency gain from mixing students of different abilities comes from the non-linearity of this effect: the achievement of individual students rises with an improvement in the average quality of their classmates but the increment in achievement falls as average class quality rises. That is, removing a superior student from a class comprised of other superior students and placing her in a class of weak students will raise the achievement level of the weak students more than it would reduce the achievement of the class that the student left. Hence, mixing weak and strong students raises the overall performance of the student population as the gains of the weak students exceed the losses of the strong students. While the authors point out that this finding is quite controversial, it suggests that efficiency gains come at the expense of some students while helping others.

There is, to our knowledge, no empirical evidence bearing on the analogous question for higher education (although conversation with many individuals has convinced us there is no shortage of strong opinions!). But suppose it were established that the efficiency of higher education, in terms of the overall achievement level of its students, could be increased by spreading the most talented students more evenly across institutions of higher education. Then merit awards that attract students from more prestigious to less prestigious institutions may work in this desirable direction. If elite colleges that enroll the great majority of highly able students refrain from offering merit awards, then other schools may have the opportunity to attract some of these academic stars by offering them attrac-

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[3]If resources were allocated in a similar manner—taking some from the "better" schools and giving more to the "worse" schools, the positive effect of this reallocation of students would likely be increased. One study of higher education recommends just such a change. Andre Daniere and Jerry Mechling, "Direct Marginal Productivity of College Education in Relation to College Aptitude of Students and Production Costs of Institutions," *The Journal of Human Resources*, Winter: 51-70, 1970, compute expected earnings flows for students with different abilities entering institutions of different quality. When benefit-cost ratios are examined, the conclusion is reached that we have gone too far in an allocation scheme that places high aptitude students in high quality institutions and low aptitude students in lower quality institutions. Instead, the authors recommend that we pursue a policy in which additional college places should go to higher aptitude students who are placed in low-cost institutions.

tive financial aid packages.[4] The student may very well pay a price in terms of ultimate educational or financial gain from education.[5] This student is, however, providing educational benefits to his or her classmates—benefits that are, according to the assumption we are making here, greater than those that the same student would provide to others at an elite school. The fact that the student's education is obtained at a lower cost may be seen as appropriate compensation for the benefits to others and tends to offset the possible lower educational returns to the individual students.[6] The advantage of redistributing students in this way, compared to other possible ways of redistributing students among institutions, is that the student relocates voluntarily.

There are obviously serious questions to consider about whether students and their families are able to do a good job of judging trade-offs between such educational benefits and dollars. As more schools have moved aggressively to offer generous merit awards to the very best students, increasing numbers of families will face these difficult dilemmas. Is a Harvard or Princeton or Williams education worth $100,000 *more* than a free ride at a less prestigious institution like George Washington University or Wabash? These questions pose agonizing dilemmas for families, and it is easy to worry that they may make choices that are shortsighted or poorly informed. Yet it is hard to see that anyone else is in a better position than the family members themselves to weigh such difficult choices.

In sum, the social impact of increases in merit aid is not as clear as is usually assumed. Even if merit aid went mainly to students who were already advantaged, if the efficiency increases associated with spreading the most talented students over a wider range of institutions were great enough, less-advantaged students might still benefit. If this argument holds, then under certain circumstances there may be equity as well as efficiency gains from expanded merit aid.

However, when merit aid constitutes another reward to students who have already garnered a greatly disproportionate share of the nation's resources and does not lead them to reallocate themselves in a manner that increases total educational output, it is clear that neither our equity nor efficiency goals would be satisfied. In other words, the best justification from the interests of society would be an efficiency gain associated with a more

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[4]It is interesting to note that this provides further support for the view, argued above, that agreements among premier institutions not to award "no-need" scholarships may very well be in the public interest. Such agreements actually make it *easier* for non-participants to compete. An Emory University, for example, can "bid" students away from the Ivy's without so much concern about counter-bids if the Ivy's adhere to an agreement among themselves not to make no-need awards.

[5]If the human capital model of education is correct, this loss may result from a diminished amount of learning at a lower "quality" institution; alternatively, if the credentialing model holds, the loss may result from the perception that any student attending a school that is less prestigious (based on the average quality of students) is herself less qualified.

[6]To put this in economic terms, efforts to lower the net price through "no-need" scholarships may offset lower returns due to attending a less prestigious institution. Hence, the rate of return may be the same as that obtained at a more prestigious (but more costly) institution.

even allocation of our best students—if merit aid offers from less prestigious institutions succeed in attracting top students who would not otherwise consider enrolling there, efficiency gains might be sufficient to justify this policy from the viewpoint of society. If, instead, merit aid merely redirects a top student from one of our premier institutions to another, it may be in the interest of the individual student, but it is not in the broader interest of society, especially since the opportunity cost of this spending is presumably either reduced support for need-based student aid or some other use of the resources to advance the educational purposes of the institution.

We look next at which institutions give merit aid and then turn to the question of who gets it. We conclude by relating those findings to the theoretical arguments presented above.

Who Gives Merit Aid? The Institutional Perspective

Table 1 reports amounts of non-need based grant aid awarded by institutions in 1983-84 and 1991-92, with the institutions classified by public-private control and Carnegie classification.[7] The sample is limited to non-profit bachelors'-degree-granting institutions in the United States. We omitted from consideration institutions which had missing data in categories of interest for either year. The resulting sample includes 379 observations. 1983-84 data are converted to dollars of 1991 value using the Consumer Price Index. We report non-need grant dollars (excluding athletic scholarships) per full-time freshman (including those not receiving aid) for both years, non-need grant dollars as a fraction of all (need and non-need) institutionally-funded grant dollars, and real annual growth rates of non-need and need-based institutionally funded grants. The final column shows the size of freshman enrollment in 1992 for each institutional category.[8]

In 1983-84, 294 of the 379 institutions in the sample (78 percent) reported providing non-need based aid (other than for athletes). In 1991-92, 308 institutions (81 percent) reported spending on non-need based aid.

In the aggregate, it is clear that non-need based grant aid has grown quite rapidly over this period. For this sample of institutions as a whole, non-need aid per enrolled freshman has grown from $177 in 1983-84 to $505 in 1991-92 (after adjusting for inflation). The annual real growth rate has been 13 percent, compared to 10 percent for need-based institutionally-funded aid. Non-need grants now account for almost a quarter of all institutional spending on grant aid. Growth has been rapid in both public and private institutions. At public institutions, non-need based aid accounted for 56 percent of all institutionally-funded aid in 1991-92, up from 44 percent in 1983-84. At private institutions, while non-need aid accounted for only 21 percent of the total in 1991-92 (17 percent in 1983-84), the dollars per freshman are substantially larger—$742 at private institutions compared to $252 at public institutions in 1991-92.

Further insight results from breaking the data down into categories according to the classification system developed by the Carnegie Foundation. Institutions are classified into research universities (which receive major funding for supported research), doctorate-granting universities (which receive less external support), comprehensive universities (with graduate programs but fewer doctorates), liberal arts colleges, and various categories

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[7]Our analysis of institutional behavior regarding merit aid is based on two data sets maintained by Peterson's. These are the Peterson's Annual Survey of Undergraduate Institutions, a form generally completed by a school's admissions officer, and the Peterson's Financial Aid Supplement, a form completed by the institution's financial aid officer which focuses on financial aid awards to freshmen.

[8]It is important to note that some of the reported categories include quite a small fraction of all freshmen.

Table 1

Non-need aid per freshman by public vs. private control and Carnegie classification of institution, 1983-84 and 1991-92

	Carnegie class	Non-need aid per freshman (1991 dollars)		Non-need aid as fraction of all inst. based aid		Real growth rate, aid per freshman		Freshman enrollment
		1983-84	1991-92	1983-84	1991-92	non-need	need	1991-92
Public	Research I	71	296	0.32	0.46	18	11	33056
	Research II	112	525	0.62	0.64	19	19	4957
	Doctorate I	90	185	0.44	0.55	9	2	10874
	Doctorate II	43	108	0.14	0.63	11	-17	1359
	Comp I	101	193	0.51	0.67	8	-1	52488
	Comp II	269	507	0.75	0.63	8	15	4251
	LA II	225	852	0.46	0.60	17	10	977
	Art and	0	0	0.00	0.00	**	-9	1390
	Other Spec	0	79	0.00	0.67	**	-13	374
All public		96	252	0.44	0.56	12	6	110003
Private	Research I	201	474	0.08	0.10	11	8	14361
	Research II	205	1051	0.10	0.19	20	11	4757
	Doctorate I	46	399	0.08	0.18	27	15	6322
	Doctorate II	379	1442	0.29	0.44	17	7	2515
	Comp I	328	790	0.32	0.28	11	13	24808
	Comp II	244	768	0.22	0.24	14	12	11462
	LA I	203	660	0.10	0.14	15	9	27156
	LA II	383	1040	0.30	0.33	13	11	19123
	Religious	268	618	0.58	0.49	10	11	396
	Other	266	607	0.39	0.40	10	13	599
	Engineering	36	80	0.08	0.08	10	13	447
	Business	129	365	0.21	0.14	13	19	3391
	Art and	74	513	0.16	0.34	24	11	1755
	Teachers	18	59	0.13	0.12	14	17	170
All private		253	742	0.17	0.21	13	10	117262
All		177	505	0.21	0.24	13	10	227265

Note: Carnegie classification as of 1987
Source: Peterson's institutional and financial aid data bases

of specialized institutions. The first four categories (research universities, doctorate-granting universities, comprehensive universities, and liberal arts colleges) are further subclassified into two quality levels, designated "I" and "II." In private higher education, the less prestigious research universities (Research II), doctorate granting institutions (Doctorate II), and liberal arts colleges (LA II) have made especially large investments in non-need based grant aid, with spending per freshman in 1991-92 at $1,051, $1,442, and $1,040, respectively. This can be contrasted with spending at their more prestigious counterparts of only $474 at Research I, $399 at Doctorate I, and $660 at LA I institutions. The two types of comprehensive universities, on the other hand, spend similar amounts on non-need based grant aid.

In terms of changes over time, Research II universities have been investing heavily in non-need based aid as evidenced by an annual real growth rate that is almost twice as great as the growth rate in need-based aid (20 percent versus 11 percent) and the growth rate in non-need based aid at Research I institutions (again, 20 percent versus 11 percent). Interestingly, while both Doctorate I and Doctorate II schools have also been increasing non-need based aid far more rapidly than need-based aid (with annual real growth rates of 27 percent versus 15 percent at Doctorate I schools and 17 percent versus 7 percent at Doctorate II schools), the more prestigious schools in this category have been increasing their non-need based aid at a much more rapid rate than the others.[9] At comprehensive schools, there is little difference between growth rates in non-need and need-based aid or between institutions of different quality. The same is largely the case at liberal arts colleges, although LA I institutions have increased their non-need based aid faster than their investment in need-based aid (with annual real growth rates of 15 percent versus 9 percent).

Public institutions show many similarities to the trends for the private sector. The research and doctorate-granting universities have targeted a lot of their aid resources on non-need based grants, sometimes in the face of low growth or decline in overall aid resources.[10] The heaviest investment in terms of dollars per freshman among public institutions occurs at Research II ($525), Comprehensive II ($507), and LA II ($852) institutions. At those schools, the greatest evidence of differential investment in non-need based aid is at the liberal arts colleges, although the small number of observations makes this finding tentative.

These results suggest that a closer look at non-need based aid according to the "selectivity" or "prestige" of the institution may be helpful. Table 2 examines one

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[9]Note, however, that the Doctorate I schools are starting from a much smaller base than the Doctorate II schools.

[10]Caution is advised in interpreting the numbers for certain institutional categories due to the small number of freshmen enrolled. For example, enrollment in the public doctorate II category is only 1,359.

selectivity measure—a self-report from the institution on difficulty of entrance, rated on a scale from 1 to 5, with 1 meaning most selective.[11]

Table 2

Non-need aid per freshman by institution's admissions difficulty, 1983-83 and 1991-92

	Entrance difficulty	Non-need aid per freshman (1991 dollars) 1983-84	1991-92	Annual real growth rate	Freshmen 1991-92
Public	2	25	124	20	9183
	3	83	251	14	71261
	4	143	284	9	18029
	5	147	311	9	11530
All public		96	252	12	110003
Private	1	0	1	16	11683
	2	208	640	14	29547
	3	292	924	14	65322
	4	204	665	15	8486
	5	824	899	1	2291
All private		253	741	13	117329
All		177	505	13	227332

Note: difficulty of entrance is judged by institution, with 1 as most difficult.
Source: Peterson's institutional and financial aid databases

For public higher education there is a clear pattern in the data: the more selective institutions (in 1983-84) had the highest growth rates of non-need based aid. Those public institutions who described entrance as "very difficult" (rated 2) raised their spending per freshman on non-need grants by 20 percent per year after adjusting for inflation, while those rated 4 or 5 (minimally difficult or noncompetitive) raised their spending by only 9 percent annually. Nonetheless, it was still true in 1991-92 that the largest number of dollars spent per freshman on non-need based aid was at the least selective among the public institutions ($311), an amount that was two and a half times the level of spending at the most selective public schools ($124).

[11]Peterson's provides guidelines to institutions in making this rating. For example, institutions ranked "1-Most Difficult" are those where "more than 75 percent of freshmen were in the top 10 percent of their high school class and scored over 1250 on SATs or over 29 on ACT; about 30 percent of all applicants accepted." Those rated "5-Noncompetitive" agreed that "virtually all applicants accepted regardless of high school rank or test scores." The following are the suggested acceptance rates for the other categories: 2 (Very difficult) - 60 percent or fewer; 3 (Moderately difficult) - 85 percent or fewer; and 4 (Minimally difficult) - 95 percent or fewer (but not 100 percent).

In private higher education, the most selective institutions represented in this data set reported virtually no spending on non-need awards.[12] The least selective institutions had the highest spending on non-need awards in 1983-84, but increased their spending on non-need based aid by only 1 percent annually, while other categories of institutions raised their spending quite rapidly. In 1983-84, the least selective places spent $500 to $600 more per enrolled freshmen on non-need based aid than did other private institutions; by 1991-92, that gap had shrunk to $250 or so, with schools that are "moderately difficult" to enter actually spending more per student than the least prestigious institutions.

The quite rapid growth in spending on non-need based aid in general, and academic merit aid specifically (except at the most selective private colleges and universities), is perhaps the most significant finding here. It appears from these data that non-need based aid is becoming a more important competitive factor for a wide range of institutions.

It is easy to understand why the most selective and prestigious institutions invest less in merit aid than other institutions. These institutions face a substantial excess demand among applicants, rejecting two, three, or more applicants for every one they accept. Given that many of these rejected applicants would be full pay students if admitted, the opportunity cost of merit awards is quite high: rather than the alternative to a merit student being an empty bed, the alternative is a student who brings respectable credentials and a substantial tuition payment.

These basic economic considerations have undoubtedly been bolstered by agreement among several groups of prominent institutions to limit their aid awards to need-based aid only, prohibiting non-need merit awards. While Justice Department actions against admissions overlap practices, which provided a particular mechanism for enforcing these agreements, have led to the abandonment of overlap meetings, Congressional legislation (which expires October 31, 1994) has explicitly legalized agreements among institutions not to engage in merit aid competition. While these agreements are important, we would also stress that the basic economic incentives for engaging in merit competition are less for highly selective institutions than for others.

A second observation we noted earlier is the rapid increase in use of merit aid at a wide range of institutions. This upsurge in merit aid, we would suggest, is related to the extended period of demographic decline colleges and universities have endured since the early 1970's. Many institutions are apparently using merit aid as part of a defensive strategy, hoping to preserve enrollment levels and student quality in the face of declining applicant pools. To the extent that this force has been at work, it would be reasonable to

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[12]Many highly selective institutions were at the time of this survey parties to agreements to confine their student aid spending to need-based awards. It is possible that some non-need based aid was provided by these institutions in disguised form (for example by offering to pay for graduate study, or by providing guaranteed support for summer research). Other institutions may have declined to report on non-need based aid, even if they were not part of such agreements.

expect some abatement in the use of merit aid as demographic trends reverse themselves later in the decade.

Finally, if schools are engaging in either a repositioning or defensive strategy with regard to the use of merit aid, this would imply that merit aid investments are made on a temporary basis. As one index of how much variation there is in institutions' reliance on merit aid, we compared the list of the top forty institutions in use of merit aid per enrolled freshmen in 1984 and 1992. Only eight of the forty institutions appear on the list in both years. This appears to indicate that, at least for schools that invest heavily in merit aid, their commitment to its use varies quite substantially over time.

Who Receives Merit Aid? The Student Perspective

Our analysis of the distribution of merit aid among students draws on the National Postsecondary Student Aid Surveys (NPSAS) for 1987 and 1990.[13] Data were collected for 43,176 students in 1986-87, and 46,788 students in 1989-90.[14] Included in the NPSAS files are weights that can be used in developing national estimates from this sample.

Tabular Analysis

It is of particular interest to examine merit awards in terms of the race and gender of the students who receive them. These results appear in Tables 3 through 5. Table 3 examines aid distributions over all classes of institutions, while Tables 4 and 5 consider private and public institutions, respectively. The data reported here focus only on 1989-90. Athletic awards are not included in the awards reported in these tables. Non-need awards both to students who also receive need-based aid and to students who do not receive need-based aid are included in these tables.[15]

Beginning with Table 3, we can first note that, aggregating over both institutional type and racial group, a larger fraction of women than men receive awards (8.70 percent versus 6.95 percent) and female recipients of awards receive larger awards than male recipients ($1,766 versus $1,578). This pattern of larger and more frequent awards for women than men holds for Whites, Blacks and Hispanics, but not for American Indians or Asians.[16] Comparing racial groups, Whites are considerably more likely to receive merit aid than are Asians, with Blacks, Hispanics and American Indians falling in between. Average award amounts for those receiving awards are, however, somewhat smaller for Whites than for other racial/ethnic groups. Asians and Blacks receive the largest awards on average, with Hispanics and American Indians having average award levels in between.

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[13]These are unique among national data bases in providing information about family resources and means of financing college that are verified through data obtained from the student, the student's parents, and the institution's records. Similar studies were conducted for the 1986-87 and 1989-90 academic years. In both years, students enrolled in public, private and proprietary schools (ranging from program lengths of less than two years to university-level) were sampled.

[14]The analysis below is restricted to students attending four-year non-profit institutions, leading to sample sizes considerably smaller than the total number of students interviewed in the NPSAS surveys.

[15]The results described in the paragraphs below are largely replicated when non-need awards to needy students are ignored.

[16]Note that the representation of American Indians in the sample is very low, which renders any conclusions about this group perilous.

Table 3

NPSAS 1990
Public and Private 4-year and 4-year PhD
Institutional Non-Need Awards (Excluding Athletic Awards)
Including Awards to Students who also Receive Need Awards
Weighted Values

race	sex	% of students in group receiving merit	average merit award per recipient	total merit awards[1]	sample N	share of sample	share of merit aid
Total	total	7.86%	$1,686	$653,869,528	21,945		
	female	8.70%	$1,766	$393,363,699	11,288	51.9	60.2
	male	6.95%	$1,578	$260,505,830	10,657	48.1	39.8
American Indian	total	5.11%	$1,956	$ 2,785,332	123	.6	.4
	female	3.15%	$4,137	$ 1,756,257	56	.3	.3
	male	6.96%	$1,030	$ 1,029,076	67	.3	.2
Asian/Pac. Islander	total	4.53%	$2,494	$ 28,173,400	1,182	5.1	4.3
	female	4.01%	$2,480	$ 11,210,181	526	2.3	1.7
	male	4.95%	$2,503	$ 16,963,219	656	2.8	2.6
Black, non-Hispanic	total	6.53%	$2,344	$ 60,057,470	1,709	8.0	9.2
	female	7.60%	$2,403	$ 42,435,070	1,013	4.7	6.5
	male	4.98%	$2,214	$ 17,622,400	696	3.2	2.7
Hispanic	total	6.15%	$1,846	$ 25,948,640	1,009	4.6	4.0
	female	6.46%	$2,133	$ 16,648,623	543	2.5	2.6
	male	5.80%	$1,487	$ 9,300,017	466	2.2	1.4
White, non-Hispanic	total	8.31%	$1,601	$536,904,687	17,922	81.8	82.1
	female	9.25%	$1,671	$321,313,568	9,150	42.2	49.1
	male	7.32%	$1,507	$215,591,118	8,772	39.6	33.0

[1]The calculation of total merit awards is based on weights that reflect the relation between the number of students from particular groups in the sample and the numbers in all of U. S. higher education.

Table 4

NPSAS 1990
Private 4-year and 4-year PhD
Institutional Non-Need Awards (Excluding Athletic Awards)
Including Awards to Students who also Receive Need Awards
Weighted Values

race	sex	% of students in group receiving merit	average merit award per recipient	total merit awards[2]	sample N	share of sample	share of merit aid
Total	total	15.10%	$1,997	$459,154,783	12,230		
	female	16.78%	$2,073	$273,248,862	6,198	51.6	59.5
	male	13.32%	$1,894	$185,905,921	6,032	48.4	40.5
American Indian	total	8.48%	$3,181	$ 2,178,901	65	.5	.5
	female	12.78%	$4,137	$ 1,756,257	26	.2	.4
	male	5.48%	$1,623	$ 422,645	39	.3	.1
Asian/Pac. Islander	total	8.04%	$3,356	$ 21,066,506	704	5.1	4.6
	female	6.70%	$3,389	$ 7,778,808	306	2.3	1.7
	male	9.09%	$3,337	$ 13,287,698	398	2.9	2.9
Black, non-Hispanic	total	8.91%	$2,771	$ 27,641,857	872	7.4	6.0
	female	9.22%	$2,966	$ 18,021,964	511	4.3	3.9
	male	8.47%	$2,467	$ 9,619,893	361	3.0	2.1
Hispanic	total	8.66%	$2,121	$ 11,363,205	519	4.1	2.5
	female	7.47%	$2,685	$ 6,867,537	286	2.3	1.5
	male	10.12%	$1,606	$ 4,495,668	233	1.8	1.0
White, non-Hispanic	total	16.45%	$1,911	$396,904,314	10,070	82.9	86.4
	female	18.59%	$1,983	$238,824,296	5,069	42.6	52.0
	male	14.19%	$1,812	$158,080,018	5,001	40.4	34.4

[2]The calculation of total merit awards is based on weights that reflect the relation between the number of students from particular groups in the sample and the numbers in all of U. S. higher education.

Table 5

NPSAS 1990
Public 4-year and 4-year PhD
Institutional Non-Need Awards (Excluding Athletic Awards)
Including Awards to Students who also Receive Need Awards
Weighted Values

race	sex	% of students in group receiving merit	average merit award per recipient	total merit awards[3]	sample N	share of sample	share of merit aid
Total	total	4.63%	$1,234	$194,714,745	9,715		
	female	5.13%	$1,321	$120,114,837	5,090	52.0	61.7
	male	4.09%	$1,115	$ 74,599,909	4,625	48.0	38.3
American Indian	total	3.74%	$ 821	$ 606,431	58	.6	.3
	female	0.00%	$ 0	$ 0	30	.0	.0
	male	7.69%	$ 821	$ 606,431	28	.3	.3
Asian/Pac. Islander	total	2.93%	$1,416	$ 7,106,894	478	5.0	3.7
	female	2.83%	$1,542	$ 3,431,373	220	2.3	1.8
	male	3.00%	$1,315	$. 3,675,521	258	2.7	1.9
Black, non-Hispanic	total	5.58%	$2,072	$ 32,415,613	837	8.2	16.7
	female	6.96%	$2,108	$ 24,413,105	502	4.9	12.5
	male	3.56%	$1,970	$ 8,002,507	335	3.3	4.1
Hispanic	total	5.22%	$1,676	$ 14,585,435	490	4.9	7.5
	female	6.06%	$1,864	$ 9,781,086	257	2.5	5.0
	male	4.31%	$1,391	$ 4,804,349	233	2.4	2.5
White, non-Hispanic	total	4.61%	$1,096	$140,000,372	7,852	81.3	71.9
	female	5.02%	$1,148	$ 82,489,272	4,081	42.0	42.4
	male	4.17%	$1,029	$ 57,511,100	3,771	39.3	29.5

[3]The calculation of total merit awards is based on weights that reflect the relation between the number of students from particular groups in the sample and the numbers in all of U. S. higher education.

It is worth noting that a number of different factors may contribute to these results. While one consideration is that particular schools may give different awards to otherwise comparable students of different racial or ethnic backgrounds, it is also true that students from different groups may also vary in the types of schools they are likely to attend (and, as shown above, some types of schools give more or larger awards than others) as well as in personal characteristics like SAT scores or high school grades that influence whether schools provide merit aid and how much aid is awarded. The multivariate statistical analysis discussed below reports results that control for some of these influences.

In turning from the aggregate results to results that compare the public and private sectors, some interesting differences between the sectors emerge. At private institutions, Whites are about twice as likely to receive merit scholarships as are members of minority groups, while at public institutions, Blacks and Hispanics are more likely than Whites, Asians or American Indians to receive merit aid. In both sectors, average awards are higher for minority group members than for Whites.[17]

The last two columns of Tables 3 through 5 provide a useful way to summarize some of the relationships we have considered. These columns show, first, the share of all students who belong to a particular race-gender group and, second, the share of all merit aid dollars devoted to that group. Thus, for example, Table 3 shows that women comprise 51.9 percent of enrollments in all four-year institutions, while receiving 60.2 percent of all merit aid. A similar pattern of allocation of aid dollars by gender is observed in both public and private sectors. The story on distribution of merit aid dollars by race is, however, quite different in the two sectors. At private institutions, 82.9 percent of students are White, while 86.4 percent of merit aid dollars are allocated to White students. At public institutions, 81.3 percent of students are white, but only 71.9 percent of merit aid dollars are allocated to that group. At public institutions, Blacks and Hispanics get a disproportionately large share of merit aid: Blacks comprise 8.2 percent of enrollment while receiving 16.7 percent of merit aid dollars, while Hispanics comprise 4.9 percent of enrollment while receiving 7.5 percent of aid. In private institutions, by contrast, both Blacks and Hispanics receive aid shares that are less than their enrollment shares. In both public and private sectors, Asians receive a smaller share of aid dollars than their enrollment share.

Multivariate Statistical Analysis

We can gain further understanding of the determinants of individual merit awards through the use of multivariate statistical techniques, which allow us to examine the

[17]The exception is American Indians at public institutions. Note, however, that data for this group are based on just two students in the sample who received merit awards at public institutions.

influence of variation in a single factor on a student's expected merit award while holding other influences constant.[18]

We discuss first variables measuring students' academic qualification—the SAT score (or ACT equivalent) for freshmen, and the GPA for upperclassmen.[19] The coefficients on both variables are positive and statistically significant. That is, all else equal, an increase in the SAT score for a freshman or the GPA for an upperclassman would produce an increase in the expected size of the merit scholarship that student would receive. Comparing the magnitudes of these two results, we can say that a third of a point on the GPA (e. g., a change from B+ to A-) is equivalent in its impact on the expected merit award to a 118 point increase in the SAT score.

We turn next to the effect of several demographic and economic characteristics (gender, family income, and race) on the expected value of the merit award, holding other things constant. Males receive significantly smaller awards than women, after controlling for differences in other characteristics. Students from families with higher incomes receive smaller merit awards. Race-ethnic differences in expected award levels are not statistically significant, with the exception of Asian upperclassmen, where a negative effect is observed. Turning to institutional categories, attending a public Ph.D. granting institution or a private institution (regardless of whether they grant Ph.D.s) generally positively affects the expected value of the merit award relative to the value at public institutions that do not grant the Ph.D.

Finally, for upperclassmen, we can compare expected awards for juniors and seniors to those for sophomores. We find no significant difference between awards to sophomores and juniors, while seniors are expected to receive awards that are smaller than those for sophomores. This effect could result either from colleges' treating upperclassmen differently from freshmen, or from increases over time in the award levels to successive cohorts of students.

We next separate out private schools and public schools. Beginning with the academic qualification measures, the effects of increases in either SAT score or GPA are virtually identical across the two sectors.[20] Turning to the other explanatory variables, as was found

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[18]The most familiar such multivariate technique is an Ordinary Least Squares (OLS) regression. However, this technique is inappropriate in the present context—it presupposes that the dependent variable (in our case, the dollar value of the merit award) is normally distributed and ranges over all possible values. Merit awards, however, are always positive or zero, with many students receiving no merit award. We therefore employ a statistical technique known as TOBIT analysis, which corrects for the presence of a large number of observations with the dependent variable equal to zero.

[19]Whenever possible the analysis described below using 1990 data was replicated using 1987 data. Important differences are summarized at the end of this section.

[20]Note, of course, that substantially lower tuition in the public sector means that an identical merit scholarship constitutes a much higher percentage of total tuition at public schools than at private schools.

earlier in the aggregate results, freshman males fare poorly, while higher family income generally is associated with less merit aid, although there is no significant link between family income and merit awards for upperclassmen at public schools. As was found in the aggregate results, race-ethnic differences in expected award show that Asian upperclassmen attending private schools receive merit awards that are substantially less than a similarly qualified White students would receive. In addition, the separate private-public regressions show that a Black freshman attending a public institution would expect to receive a merit award that is larger than would a White counterpart.

Differences between institutions that grant the Ph.D. and those that don't depend on the sector in question. A freshman attending a Ph.D.-granting private institution would receive less in merit aid than if that student attended a non-Ph.D. granting private school. The same is true for upperclassmen. In the public sector, however, there are no statistically significant differences between Ph.D. and non-Ph.D. granting institutions in the amount of merit aid a freshman would receive. For upperclassmen, attending a Ph.D. granting public school actually increases the merit award. Finally, comparing juniors and seniors to sophomores, there are no statistically significant differences in merit awards at either private or public schools.

It seems likely that the amount of merit award a student will receive depends not only on the absolute level of her qualifications, but on how those compare to the average qualifications of students at the school. Other things equal, we would expect a given SAT performance to yield a higher merit award at a school where the average SAT was lower.

The aggregate results show that there is no statistically significant difference in the merit award a student would receive for attending a school with an average SAT score below 800 as compared with a school with an average SAT score between 800 to 1000. However, a freshman attending a school with an average SAT score between 1000 and 1200 gets less in merit aid than if that student had attended a school with an average SAT score of between 800 and 1000. Should that student attend a school with an average SAT score of greater than 1200, she would receive substantially less (more than $8,000 less) than she would if she had attended a school with an average SAT score of between 800 and 1000. As for freshmen, an upperclassman attending a school with an average SAT score above 1200 gives up a substantial amount of merit aid that the student would have received had she attended a school with an average SAT score between 800 and 1000.

At private schools the opportunity cost of attending a school with an average SAT score above 1200 (as opposed to a school with an average SAT score between 800 and 1000) is very large, almost $10,000 for freshmen. However, there appears to be no difference in expected merit award level as a function of a school's average SAT at public institutions.

Another way to gain insight into the impact of a student's SAT score relative to the school average is to estimate the increase in merit aid a student can expect for attending a

school with an average SAT score below what the student achieved. We created a variable defined as the individual's SAT score minus the institutional average.

Students receive a good deal of merit aid for attending a school with an average SAT score that is low relative to the student's score. In the aggregate, the payment is $12.13 per SAT point, with $13.26 per point at private schools and $5.71 per point at public schools. Should a student choose to attend a school with an average SAT score 100 points less than his or her own, these estimates indicate an increase in merit aid of $1,326 at private schools and $571 at public schools.

The regression results provide a consistent picture. As expected, academic qualifications play a major role in the awarding of merit aid. Academic qualifications relative to the average qualifications at a school also play a significant role. Income also matters, with students from high income backgrounds receiving smaller merit awards, controlling for other student and institutional characteristics, although this factor was more important in 1987 than in 1990, and at private rather than public institutions. Turning to gender, males receive significantly smaller awards than women. Certain statistically significant racial/ethnic differences are also apparent, with Asians suffering in terms of merit aid awards relative to Whites, and Blacks doing relatively well. Both the Asian and Black impacts are stronger in 1990 than in 1987, although it is interesting to note that these racial/ethnic effects disappear when controls for institutional quality are introduced.[21]

[21]This last fact does not necessarily imply that racial/ethnic background plays no role in awarding merit aid. For example, if Asians are offered less merit aid than their White counterparts with similar academic qualifications, Asians might then be more likely to attend more selective schools that offer little merit aid to anyone. Thus, the fact that, controlling for the academic quality of the institution, being Asian does not appear to affect merit aid awards, does not necessarily mean that racial/ethnic differences don't matter. Our analysis is not able to resolve this question either way.

Conclusion

What do the findings imply in terms of the positive and negative impact of merit aid for the nation?

The institutional data show that the less selective institutions in both the public and private sectors are far more involved in merit aid than their more prestigious counterparts. This is encouraging from a social perspective—it suggests that the potential efficiency gains accompanying more mixing of students of different quality may be realized. At the same time, the fact that the most selective institutions are not spending very much to induce top students to attend one high quality school over another implies that there is little in the way of socially wasteful economic rents. These results should temper any worries coming from our discovery that non-need aid comprises more than half of all institutionally based aid at public schools and about one-fifth of all institutionally based aid at private schools. Nevertheless, the revenue foregone by institutions that engage heavily in merit competition clearly absorbs resources that could otherwise go into the educational enterprise. These costs of merit competition are clearly on the rise.

The final set of regression results described above, those which consider the combined impact of the individual student's SAT score and the institution's average SATs, have an especially interesting bearing on the question of whether merit aid has an important mixing effect in U. S. higher education. A student with a given SAT score gains substantially in expected merit award by attending an institution (particularly a private institution) with lower average SAT scores. Or, to put it in slightly different terms, students are generously rewarded for the *difference* between their SAT score and the school's average. Since one school's merit student may be another's average student, this implies that the mixing effect of merit awards is quite widespread.

In sum, it is very clear that merit aid works to compensate students for attending schools that are "beneath" them, especially in the private sector. This finding implies that the efficiency gains discussed above are a distinct possibility. But what about the equity repercussions? Does a disproportionate amount of merit aid go to students who already have a variety of advantages bestowed upon them? Here the story is more mixed. While White students get a proportionate share of merit aid (excluding athletics) in total, they are over-represented in the merit pool at private institutions while under-represented at public schools. Blacks and Hispanics have the opposite experience—collecting a disproportionate share of merit aid at public schools while losing out in the private sector. Asians, on the other hand, are under-represented in terms of merit aid at both groups of schools. Finally, the evidence that, everything else equal, merit aid rewards higher academic qualifications while, especially in the private sector, providing smaller awards to students from more affluent backgrounds, is encouraging from both an equity and an efficiency perspective.

While it is undoubtedly helpful to have a clear picture of the role merit aid plays in our higher education system, our understanding of the effects of merit aid is limited by what little we know about fundamental questions relating to the educational process. If, as expected, merit aid continues to become a bigger part of the total aid pie, it becomes even more important to add to our understanding of the efficiency and equity effects associated with changes in the distribution of top students. As a former Harvard University director of admissions argued years ago, "It has not by any means been demonstrated that the overall welfare of the nation or of humanity would best be served by concentrating all the ablest students in a few of the strongest universities." (Thresher 1966) The question of the educational impact of alternative ways of distributing students is difficult to research, but terribly important to a wide range of concerns about the social impact of higher education. In addition, we need further study of how merit aid influences the college selection choices of individual students as well as of how institutions make decisions about whether and on what terms to provide such awards. This paper, by presenting basic information on who gives merit aid, who receives it, and under which conditions society gains or suffers as a result, could set the stage for additional research into this increasingly important topic.

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